CLAIMS

I claim:

1. In a data processing system, a retirement planning method for computing a possible future value of a portfolio of an investor, comprising the steps of:

(a) receiving a plurality of user inputs comprising an initial value of the portfolio and a current age of the investor;

(b) providing data indicating one of cumulative probabilities of living to an age of death and cumulative probabilities dying at an age of death for persons of a given age group;

(c) randomly drawing a number between 0 and 1 for the investor;

(d) defining the randomly drawn number as one of said one of cumulative probabilities of living to an age of death and cumulative probabilities of dying at an age of death;

(e) determining an age of death of the investor in accordance with said data based on the current age of the investor and the randomly drawn number;

(f) computing a future value of the portfolio using the age of death of the investor determined in step (e), a predetermined rate of return, and the initial value of the portfolio; and

(g) outputting the computed future value of the portfolio.

2. The method of claim 1, wherein the user inputs further include a mortality factor and the data further include said mortality factor, said mortality factor being the gender of the investor.

3. The method of claim 2, wherein the user inputs further include another mortality factor and the data include said another mortality factor, said another mortality factor being the racial group of the investor.

4. The method of claim 1, wherein the user inputs include the predetermined rate of return.

5. The method of claim 1, wherein the user inputs further include an average rate of return and a standard deviation for defining a lognormal distribution of rates of return, and the predetermined rate of return is randomly selected from the lognormal distribution of rates of return.

6. In a data processing system, a retirement planning method for computing a possible future value of a portfolio of a plurality of joint investors, comprising the steps of:

(a) receiving user inputs comprising an initial value of the portfolio, a current age of a first joint investor, and a current age of a second joint investor;

(b) providing data indicating one of cumulative probabilities of living to an age of death and cumulative probabilities dying at an age of death for persons of a given age group;

(c) randomly drawing a number between 0 and 1 for the first joint investor;

(d) defining the randomly drawn number of step (c) as one of said one of cumulative probabilities of living to an age of death and cumulative probabilities of dying at an age of death for the first joint investor;

(e) determining an age of death of the first joint investor in accordance with said data, based on the current age of the first joint investor and the randomly drawn number of step (c);

(f) randomly drawing a number between 0 and 1 for the second joint investor;

(g) defining the randomly drawn number of step (f) as one of said one of cumulative probabilities of living to an age of death and cumulative probabilities of dying at an age of death for the second joint investor;

(h) determining an age of death of the second joint investor in accordance with said data based on the current age of the second joint investor and the randomly drawn number of step (f);

(i) determining the greater age of death of the first and second joint investors by comparing the age of death of the first joint investor determined in step (e) with the age of death of the second joint investor determined in step (h); and

(j) computing a future value of the portfolio using said greater age of death of the joint investors, a predetermined rate of return, and the initial value of the portfolio; and

(k) outputting the computed future value of the portfolio.

7. The method of claim 6, wherein the user inputs further include a mortality factor and the data further include said mortality factor, said mortality factor being the gender of the investor.

8. The method of claim 7, wherein the user inputs further include another mortality factor and the data include said another mortality factor, said another mortality factor being the racial group of the investor.

9. The method of claim 6, wherein the user inputs include the predetermined rate of return.

10. The method of claim 6, wherein the user inputs further include an average rate of return and a standard deviation for defining a lognormal distribution of rates of return, and the predetermined rate of return is randomly selected from the lognormal distribution of rates of return.

11. In a data processing system, a retirement planning method for computing a possible future value of a portfolio of an investor, comprising the steps of:

(a) receiving user inputs comprising an initial value of the portfolio and a current age of the investor;

(b) randomly drawing a number between 0 and 1;

(c) determining a mortality rate of the investor in accordance with a mortality table based on the current age of the investor;

(d) comparing the randomly drawn number with said determined mortality rate using a preselected logical relation such that:

(1) if the randomly drawn number satisfies said preselected logical relation with said determined mortality rate of the investor, define the current age as the age of death of the investor;

(2) if the randomly drawn number does not satisfy said preselected logical relation with said determined mortality rate, advance the current age of the investor to a next age group indicated in the mortality table and repeat steps (b) through (d);

(e) computing a future value of the portfolio using the age of death defined in step (d)(1), a predetermined rate of return, and the initial value of the portfolio; and

(f) outputting the computed future value of the portfolio.

12. The method of claim 11, wherein said preselected logical relation is a logical operator representing less than or equal to (i.e. $\leq$).

13. The method of claim 11, wherein the user inputs further include a mortality factor and the mortality table further includes said mortality factor, said mortality factor being the gender of the investor.

14. The method of claim 13, wherein the user inputs further include another mortality factor and the mortality table includes said another mortality factor, said another mortality factor being the racial group of the investor.

15. The method of claim 11, wherein the user inputs include the predetermined rate of return.

16. The method of claim 11, wherein the user inputs further include an average rate of return and a standard deviation for defining a lognormal distribution of rates of return, and the predetermined rate of return is randomly selected from the lognormal distribution of rates of return.

17. The method of claim 11, wherein said determining step further comprises determining the mortality rate of the investor in accordance with a cumulative probabilities table based on the current age of the investor.

18. In a data processing system, a retirement planning method for computing a possible future value of a portfolio of a plurality of joint investors, comprising the steps of:

(a) receiving user inputs comprising an initial value of the portfolio, a current age of a first joint investor, and a current age of a second joint investor;

(b) randomly drawing a number between 0 and 1 for the first joint investor;

(c) determining a mortality rate of the first joint investor in accordance with a mortality table based on the current age of the first joint investor;

(d) comparing the randomly drawn number with said determined mortality rate for the first joint investor using a preselected logical relation such that:

(1) if the randomly drawn number satisfies said preselected logical relation with said determined mortality rate of the first joint investor, define the current age as the age of death of the first joint investor;

(2) if the randomly drawn number does not satisfy said preselected logical relation with said determined mortality rate, advance the current age of the investor to a next age group indicated in the mortality table and repeat steps (b) through (d);

(e) randomly drawing a number between 0 and 1 for the second joint investor;

(f) determining a mortality rate of the second joint investor in accordance with the mortality table based on the current age of the second joint investor;

(g) comparing the randomly drawn number with said determined mortality rate for the second joint investor using the preselected logical relation such that:

(1) if the randomly drawn number satisfies said preselected logical relation with said determined mortality rate of the second joint investor, define the current age as the age of death of the second joint investor; and

(2) if the randomly drawn number does not satisfy said preselected logical relation with said determined mortality rate, advance the current age of the investor to a next age group defined in the mortality table, and repeat steps (e) through (g);

(h) determining the greater age of death of the joint investors by comparing the age of death of the first joint investor defined in step (d)(2) with the age of death of the second joint investor defined in step (g)(2);

(i) computing a future value of the portfolio using the greater age of death determined in step (g), a predetermined rate of return, and the initial value of the portfolio; and

(j) outputting the computed future value of the portfolio.

19. The method of claim 18, wherein said preselected logical relation is a logical operator representing less than or equal to (i.e. $\leq$).

20. The method of claim 18, wherein the user inputs further include a mortality factor and the mortality table further includes said mortality factor, said mortality factor being the gender of the investor.

21. The method of claim 20, wherein the user inputs further include another mortality factor and the mortality table includes said another mortality factor, said another mortality factor being the racial group of the investor.

22. The method of claim 18, wherein the user inputs include the predetermined rate of return.

23. The method of claim 18, wherein the user inputs further include an average rate of return and a standard deviation for defining a lognormal distribution of rates of return, and the predetermined rate of return is randomly selected from the lognormal distribution of rates of return.

24. In a data processing system, a retirement planning method for computing a possible future value of a portfolio of an investor, comprising the steps of:

(a) receiving user inputs comprising an initial value of the portfolio and a current age of the investor;

(b) randomly drawing a number between 0 and 1 for the investor;

(c) determining a mortality rate of the investor in accordance with a mortality table based on the current age of the investor;

(d) comparing the randomly drawn number with said determined mortality rate using a preselected logical relation such that:

(1) if the randomly drawn number satisfies said preselected logical relation with said determined mortality rate of the investor, define the current age as the age of death of the investor, and output a current value of the portfolio as a future value of the portfolio;

(2) if the randomly drawn number does not satisfy said preselected logical relation with said determined mortality rate, compute a current value of the portfolio using a predetermined rate of return for a predetermined period, advance the current age of the investor by another predetermined period, and repeat steps (b) through (d).

25. The method of claim 24, wherein said predetermined period and said another predetermined period are substantially equal to each other.

26. The method of claim 25, wherein said predetermined period is one year.

27. The method of claim 24, wherein the user inputs further include a mortality factor and the mortality table further includes said mortality factor, said mortality factor being the gender of the investor.

28. The method of claim 24, wherein the user inputs further include another mortality factor and the mortality table further includes said another mortality factor, said another mortality factor being the racial group of the investor.

29. The method of claim 24, wherein the user inputs include the predetermined rate of return.

30. The method of claim 24, wherein the user inputs further include an average rate of return and a standard deviation for defining a lognormal distribution of rates of return, and the predetermined rate of return is randomly selected from the lognormal distribution of rates of return.

31. The method of claim 24, wherein said preselected logical relation is a logical operator representing less than or equal to (i.e. $\leq$).

32. In a data processing system, a retirement planning method for computing a possible future value of a portfolio of a plurality of joint investors, comprising the steps of:

(a) receiving user inputs comprising an initial value of the portfolio, a current age of a first joint investor, and a current age of a second joint investor;

(b) randomly drawing a number between 0 and 1 for each of the first and second joint investors;

(c) determining a mortality rate of each of the first and second joint investors in accordance with a mortality table based on the current age of the first and second joint investors;

(d) comparing the randomly drawn numbers of the first and second joint investors with corresponding mortality rates determined for the first and second joint investors in step (c) using a preselected logical relation such that:

(1) if both of the randomly drawn numbers of the first and second joint investors satisfy said preselected logical relation with said mortality rates of the first and second joint investors respectively, define the current age of the first and second joint investors as the age of death of the first and second joint investors and output a current value of the portfolio as a future value of the portfolio;

(2) if only one of the randomly drawn numbers does not satisfy said preselected logical relation with said determined mortality rate:

(i) compute a current value of the portfolio using a predetermined rate of return for a predetermined period;

(ii) advance the current age of that joint investor whose randomly drawn number does not satisfy said preselected logical relation by another predetermined period;

(iii) randomly draw a number between 0 and 1 for that joint investor;

(iv) determine the mortality rate of that joint investor in accordance with the mortality table based on the current age of that joint investor determined in step (ii);

(v) if the randomly drawn number satisfies the preselected logical relation with the mortality rate determined in step (iv), define the current age of that joint investor as the age of death of that joint investor, and output the current value of the portfolio as a future value of the portfolio; and

(vi) if the randomly drawn number does not satisfy the preselected logical relation with the mortality rate determined in step (iv), repeat steps (i) through (vi) for another predetermined period.

33. The method of claim 32, wherein said predetermined period and said another predetermined period are substantially equal to each other.

34. The method of claim 32, wherein said predetermined period is one year.

35. The method of claim 32, wherein the user inputs further include a mortality factor and the mortality table further includes said mortality factor, said mortality factor being the gender of the investor.

36. The method of claim 32, wherein the user inputs further include another mortality factor and the mortality table includes said another mortality factor, said another mortality factor being the racial group of the investor.

37. The method of claim 32, wherein the user inputs include the predetermined rate of return.

38. The method of claim 32, wherein the user inputs further include an average rate of return and a standard deviation for defining a lognormal distribution of rates of return, and the predetermined rate of return is randomly selected from the lognormal distribution of rates of return.

39. The method of claim 32, wherein said preselected logical relation is a logical operator representing less than or equal to (i.e. $\leq$).

40. In a data processing system, a method for computing a plurality of possible future values of a portfolio of an investor, the method comprising the steps of:

(a) receiving a plurality of user inputs comprising an initial value of the portfolio and a current age of the investor;

(b) providing data indicating one of cumulative probabilities of living to an age of death and cumulative probabilities dying at an age of death for persons of a given age group;

(c) dividing the interval between 0 and 1 into a plurality of partitions;

(d) defining a quantity of random numbers to be drawn from each of the plurality of partitions;

(e) randomly drawing numbers from each of the plurality of partitions, the quantity of randomly drawn numbers for each of the plurality of partitions being identical to the quantity of numbers defined in step (d);

(f) defining each of the randomly drawn numbers as one of said one of cumulative probabilities of living to an age of death and cumulative probabilities of dying at an age of death;

(g) determining an age of death of the investor in accordance with said data based on the current age of the investor and each of said randomly drawn numbers;

(h) computing a future value of the portfolio using each of said randomly drawn numbers, the age of death of the investor determined in step (g), a predetermined rate of return, and the initial value of the portfolio; and

(i) outputting the computed future value of the portfolio.

41. The method of claim 40, wherein the user inputs further include a mortality factor and the data further include said mortality factor, said mortality factor being the gender of the investor.

42. The method of claim 40, wherein the user inputs further include another mortality factor and the data include said another mortality factor, said another mortality factor being the racial group of the investor.

43. The method of claim 40, wherein the user inputs include the predetermined rate of return.

44. The method of claim 40, wherein the user inputs further include an average rate of return and a standard deviation for defining a lognormal distribution of rates of return, and the predetermined rate of return is randomly selected from the lognormal distribution of rates of return.

45. In a data processing system, a retirement planning method for computing a plurality of possible future values of a portfolio of a plurality of joint investors, the method comprising the steps of:

(a) receiving user inputs comprising an initial value of the portfolio, a current age of a first joint investor, and a current age of a second joint investor;

(b) providing data indicating one of cumulative probabilities of living to an age of death and cumulative probabilities dying at an age of death for persons of a given age group;

(c) dividing the interval between 0 and 1 into a plurality of partitions;

(d) defining a quantity of random numbers to be drawn from each of the plurality of partitions for each of the joint investors;

(e) randomly drawing numbers from each of the plurality of partitions for the first joint investor, the quantity of randomly drawn numbers for each of the plurality of partitions being identical to the quantity of numbers defined in step (d);

(f) defining each of the randomly drawn numbers of step (e) as one of said one of cumulative probabilities of living to an age of death and cumulative probabilities of dying at an age of death for the first joint investor;

(g) determining a plurality of ages of death of the first joint investor in accordance with said data, based on the current age of the first joint investor and each of the randomly drawn numbers of step (e);

(h) randomly drawing numbers from each of the plurality of partitions for the second joint investor, the quantity of randomly drawn numbers for each of the plurality of partitions being identical to the quantity of numbers defined in step (d);

(i) defining each of the randomly drawn numbers of step (h) as one of said one of cumulative probabilities of living to an age of death and cumulative probabilities of dying at an age of death for the second joint investor;

(j) determining a plurality of ages of death of the second joint investor in accordance with said data based on the current age of the second joint investor and each of the randomly drawn number of step (f);

(k) associating each of the determined plurality of ages of death of the first joint investor with each of the determined plurality of ages of death of the second joint investor so as to define a plurality of associated ages of death;

(l) determining the greater age of death of the first and second joint investors of each associated ages of death of the first and second joint investors; and

(m) computing a future value of the portfolio using said greater age of death of each associated ages of death of the first and second joint investors, a predetermined rate of return, and the initial value of the portfolio; and

(n) outputting the plurality of computed future values of the portfolio.

46. The method of claim 45, wherein the user inputs further include a mortality factor and the data further include said mortality factor, said mortality factor being the gender of the investor.

47. The method of claim 45, wherein the user inputs further include another mortality factor and the data include said another mortality factor, said another mortality factor being the racial group of the investor.

48. The method of claim 45, wherein the user inputs include the predetermined rate of return.

49. The method of claim 45, wherein the user inputs further include an average rate of return and a standard deviation for defining a lognormal distribution of rates of return, and the predetermined rate of return is randomly selected from the lognormal distribution of rates of return.

50. In a data processing system, a retirement planning method for computing a possible future value of a portfolio of an investor, comprising the steps of:

(a) receiving user inputs comprising an initial value of the portfolio and a current age of the investor;

(b) randomly drawing a number between 0 and 1;

(c) determining a vitality rate of the investor in accordance with a vitality table based on the current age of the investor;

(d) comparing the randomly drawn number with said determined vitality rate using a preselected logical relation such that:

(1) if the randomly drawn number satisfies said preselected logical relation with said determined vitality rate of the investor, define the current age as the age of death of the investor;

(2) if the randomly drawn number does not satisfy said preselected logical relation with said determined mortality rate, advance the current age of the investor to a next age group indicated in the vitality table and repeat steps (b) through (d);

(e) computing a future value of the portfolio using the age of death defined in step (d)(1), a predetermined rate of return, and the initial value of the portfolio; and

(f) outputting the computed future value of the portfolio.

51. The method of claim 50, wherein said determining step further comprises determining the vitality rate of the investor in accordance with a cumulative probabilities table based on the current age of the investor.

52. In a data processing system, a retirement planning method for computing a possible future value of a portfolio of an investor, comprising the steps of:

(a) receiving user inputs comprising an initial value of the portfolio and a current age of the investor;

(b) dividing a segment of values from 0 to 1 into intervals representing the possible ages at death for the investor, with the size of each interval corresponding to a possibility that the investor will die at each of the possible ages at death;

(c) generating a random number uniformly distributed between 0 and 1;

(d) identifying the interval which contains the random number identified in step (c) and selecting as the age at death, the age from step (b) corresponding to the identified interval;

(e) computing a future value of the portfolio using the age at death defined in step (d), a predetermined rate of return, and the initial value of the portfolio; and

(f) outputting the computed future value of the portfolio.

53. The method of claim 52, wherein said step of generating a random number (step (c)) further comprises:

i) selecting a sample size for a variable N;

ii) designating a variable RND to be equal to 0;

iii) adding the sum of $1/(n+1)$ to RND, where $0 \leq n \leq N$;

iv) if $RND \geq n/(n+1)$, then select RND as the random number.